

What is claimed is:

- 1 1. A gc chain blocking agent that is selected from the group consisting of a soluble gc-  
2 binding polypeptide, a soluble gc-blocking polypeptide, or a soluble gc mimetic agent.
- 1 2. A gc blocking agent characterized as having the property of significantly blocking a  
2 response of a cell of a mammal to interleukin-2 (IL-2), wherein said blocking occurs without  
3 any requirement for a second compound which affects response of the cell to IL-2.
- 1 3. The gc blocking agent of claim 2, wherein the required second compound is an antibody.
- 1 4. The gc blocking agent of claim 3, wherein the required second compound is an antibody  
2 specific to an antigenic determinant of a human IL-2 receptor chain.
- 1 5. The gc blocking agent of claim 2, wherein the agent interacts with IL-2 receptor chain of  
2 a different species of mammal.
- 1 6. The gc blocking agent of claim 2, wherein the agent is a monoclonal antibody that cross  
2 competes with monoclonal antibody CP.B8 produced by hybridoma cell line ATCC No.  
3 HB-12107 for binding to gc chain, and also cross competes with Fab, F(ab')<sub>2</sub>, and Fv  
4 fragments and conjugates of said CP.B8.
- 1 7. The gc blocking agent of claim 2, wherein the agent is a monoclonal antibody that cross  
2 competes with monoclonal antibody CQ.C11 produced by hybridoma cell line ATCC No.  
3 HB-12105 for binding to gc chain, and also cross competes with Fab, F(ab')<sub>2</sub>, and Fv  
4 fragments and conjugates of said CQ.C11.
- 1 8. The gc blocking agent of claim 2, wherein the agent is a monoclonal antibody that cross  
2 competes with monoclonal antibody AF.F4 produced by hybridoma cell line ATCC No.  
3 HB-12104 for binding to gc chain, and cross competes Fab, F(ab')<sub>2</sub>, and Fv fragments and  
4 conjugates of said AF.F4.
- 1 9. The gc blocking agent of claim 2, wherein the agent is a monoclonal antibody that cross  
2 competes with the monoclonal antibody AE.C9 produced by hybridoma cell line ATCC No.  
3 HB-12106 for binding to gc chain, and cross competes with Fab, F(ab')<sub>2</sub>, and Fv fragments  
4 and conjugates of said AE.C9.

1 10. The gc blocking agent of claim 2, wherein the agent is a monoclonal antibody that  
2 cross competes with the monoclonal antibody AK.F12 produced by hybridoma cell line  
3 ATCC No. \_\_\_\_\_ for binding to gc chain, and cross competes with Fab, F(ab')<sub>2</sub>, and  
4 Fv fragments and conjugates of said AK.F12.

1 11. The gc blocking agent of claim 2, wherein the agent is a monoclonal antibody  
2 comprising CP.B8 or comprising a Fab fragment of CP.B8..

1 12. The gc blocking agent of claim 2, wherein the agent is a monoclonal antibody that is  
2 human, humanized, primatized, or chimerized.

1 13. The gc blocking agent of claim 2, wherein the agent is a monoclonal antibody further  
2 characterized as being able to block a response of a cell to a cytokine that is different from  
3 IL-2.

1 14. The monoclonal antibody of claim 13, wherein the different cytokine is selected from  
2 the group consisting of interleukin-4 (IL-4), IL-7, IL-9 and IL-15.

1 15. The monoclonal antibody of claim 13, wherein the monoclonal antibody is capable of  
2 significantly blocking a response of a cell to IL-2, IL-4, and IL-7.

1 16. The monoclonal antibody of claim 13, wherein the monoclonal antibody is capable of  
2 significantly blocking a response of to IL-2, IL-4, IL-7, IL-9 and IL-15.

1 17. A continuous hybridoma cell line selected from the group consisting of ATCC No.  
2 HB-12107, ATCC No. HB-12105, ATCC No. HB-12104, ATCC No. HB-12106, add  
3 ATCC No. \_\_\_\_\_.

1 18. A monoclonal antibody produced by hybridoma cell line selected from the group  
2 consisting of ATCC No. HB-12105, ATCC No. HB-12104, ATCC No. HB-12106, and  
3 ATCC No. \_\_\_\_\_.

1 19. A polynucleotide selected from the group of sequences consisting of:

2 (a) SEQ ID NOS.: 5 and 6;

(b) a polynucleotide that hybridizes to any of the foregoing sequences under standard hybridization conditions and that encodes at least part of a polypeptide having the property of significantly blocking a response of a cell to interleukin-2 (IL-2); and

(c) a polynucleotide that encodes a protein encoded by any of the foregoing polynucleotide sequences.

20. A gc chain binding agent that includes a polypeptide sequence encoded by the polynucleotide sequence of claim 19.

21. A monoclonal antibody having complementarity determining regions (CDRs) encoded by a polynucleotide sequence selected from the group consisting of:

(a) SEQ ID NO.: 5 and 6;

(b) a polynucleotide that hybridizes to any of the foregoing sequences under standard hybridization conditions; and

(c) a polynucleotide that encodes a protein encoded by any of the foregoing polynucleotide sequences.

22. A gc blocking agent that is an antibody having a light chain variable region CDR with an amino acid sequence selected from the group consisting of : (a) amino acids 24 to 34 of SEQ ID NO: 4; (b) amino acids 50 to 56 of SEQ ID NO: 4 and (c) amino acids 89 to 97 of SEQ ID NO:4.

23. A gc blocking agent of claim 2 that is an antibody having a having a heavy chain variable region CDR with an amino acid sequence selected from the group consisting of: (a) amino acids 28 to 32 of SEQ ID NO:3; (b) amino acids 47 to 61 of SEQ ID NO: 3 and (c) amino acids 95 to 104 of SEQ ID NO: 3.

24. A gc blocking agent that can bind to an epitopic sequence of human gc chain, the epitopic sequence selected from the group consisting of : (a) SEQ ID NO: 13; (b) SEQ ID NO 14; (c) SEQ ID NO. 15; (d) SEQ ID NO: 16; (e) SEQ ID NO 17 and (f) any combination of the foregoing sequences.

25. A pharmaceutical composition which comprises a gc-blocking agent.

1 26. The composition of claim 25, wherein the agent is selected from the group consisting  
2 of a gc-blocking antibody homolog, a soluble gc-binding polypeptide, a soluble gc-blocking  
3 polypeptide, and a soluble gc mimetic agent.

1 27. The agent of claim 26 that is a monoclonal antibody that specifically binds to an  
2 antigenic determinant of the gc chain of cytokine receptors.

1 28. The monoclonal antibody of claim 27 comprising CP.B8

1 29. A method of raising an antibody against a protein antigen comprising administering an  
2 immunogen to a mammal that is a non-denatured form of protein antigen.

1 30. The method of claim 29, wherein the protein antigen comprises at least a portion of gc  
2 chain.

1 31. The method of claim 30, wherein the non-denatured form of said at least a portion of  
2 gc chain comprises a fusion molecule that includes said at least a portion fused to at least  
3 part of an immunoglobulin constant region.

1 32. The method of claim 29, further comprising coadministering the non-denatured form  
2 of the protein antigen with protein A.

1 33. The method of claim 29, wherein the non-denatured form of protein antigen is  
2 noncovalently bound to a nondenaturing adjuvant.

1 34. A method for inhibiting functioning of the gc chain, comprising the step of contacting  
2 a cell with a the gc-blocking agent of claim 1, in an amount sufficient to inhibit cellular  
3 responses to a cytokine.

1 35. A method for inhibiting functioning of the gc chain, comprising the step of contacting  
2 a cell with the gc blocking agent of claim 2, in an amount sufficient to inhibit cellular  
3 responses to at least IL-2.

1 36. The method of claim 35, where the gc blocking agent is an antibody homolog that  
2 specifically binds to an antigenic determinant of the gc chain of cytokine receptors.

1 37. The method of claim 36, wherein the monoclonal antibody comprises CP.B8.

1 38. A method for treating or reducing the advancement, severity or effects of an  
2 immunological disease in a subject comprising the step of administering a composition  
3 which includes a gc-blocking agent

1 39. The method of claim 38, wherein the blocking agent is selected from the group  
2 consisting of a gc-blocking antibody homolog, a soluble gc-binding polypeptide, a soluble  
3 gc-blocking polypeptide, and a soluble gc mimetic agent.

1 40. The method of claim 39, where the gc blocking antibody homolog is a monoclonal  
2 antibody that specifically binds to an antigenic determinant of the gc chain of cytokine  
3 receptors.

1 41. The method of claim 40, wherein the monoclonal antibody comprises CP.B8.

1 42. The method of claim 38, wherein the subject is a mammal.

1 43. The method of claim 38, wherein the immunological disease is selected from the group  
2 consisting of myasthenia gravis, IBD, rheumatoid arthritis, lupus, multiple sclerosis,  
3 insulin-dependent diabetes, sympathetic ophthalmia, uveitis, allergy, asthma, parasitic  
4 disease, graft versus host disease (GVHD), and psoriasis.

1 44. A method for inducing T-cell anergy comprising the step of administering to a  
2 population of T cells a composition which comprises a gc-blocking agent.

1 45 The method of claim 44, wherein the blocking agent is selected from the group  
2 consisting of a gc-blocking antibody homolog, a soluble gc-binding polypeptide, a soluble  
3 gc-blocking polypeptide, and a soluble gc mimetic agent.

1 46. The method of claim 45, where the gc blocking antibody homolog is a monoclonal  
2 antibody that specifically binds to an antigenic determinant of the gc chain of cytokine  
3 receptors.

1 47. The method of claim 46, wherein the monoclonal antibody comprises CP.B8.

1 48. A method for inhibiting function of a human cellular receptor, comprising the step of  
2 contacting the receptor with a noncompetitive inhibitor of the cellular receptor.

- 1 49. The method of claim 48, wherein the noncompetitive inhibitor is a gc-blocking agent.
- 1 50. The method of claim 49, wherein the noncompetitive inhibitor is a gc blocking agent  
2 that noncompetitively blocks either IL-2 or IL-4.
- 1 51. The method of claim 50, wherein the gc blocking agent is mAb CP.B8.
- 1 52. A method for treating or reducing the advancement, severity or effects of an  
2 immunological disease in a subject comprising the step of administering a noncompetitive  
3 inhibitor of a cellular receptor.
- 1 53. The method of claim 52, wherein the noncompetitve inhibitor is a gc-blocking agent.
- 1 54. The method of claim 53, wherein the noncompetitive inhibitor is a gc blocking agent  
2 that noncompetitively blocks either IL-2 or IL-4.
- 1 55. The method of claim 54, wherein the gc blocking agent is mAb CP.B8.
- 1 56. The method of claim 52, wherein the immunological disease does not respond to  
2 treatment by an inhibitor which acts competitively with respect to said cellular receptor.
- 1 57. A method of identifying a compound that non-competitively inhibits functioning of a  
2 cytokine receptor, comprising demonstrating that a capacity of the compound to inhibit the  
3 function is not competitively inhibited by high concentrations of cytokine.
- 5 58. The method of claim 57, wherein the cytokine receptor utilizes gc as one of its receptor  
components.